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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,406

05/15/2006

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EXAMINER

PARVINI, PEGAH

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,406	Applicant(s) UOTANI ET AL.	
	Examiner PEGAH PARVINI	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 30-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/14/2008, 4/10/2008, 5/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-29, drawn to a polishing composition.

Group II, claim(s) 30, drawn to a kit.

Group III, claim(s) 31-45, drawn to a polishing method.

The inventions listed as Groups I, II, and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The technical features which is common to all groups such as a polishing composition comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from an amino acid, an organic acid, and an inorganic acid are taught by U.S. Patent No. 6,776,810 to Cherian et al. Therefore, since the limitations of the groups fail to define a contribution over U.S. Patent No. 6,776,810, they fail to constitute a special technical feature and hence there is lack of unity between the cited claims.

During a telephone conversation with Sheldon Landsman on December 18, 2008 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-29. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30-45 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 10, 12-13, 16, 18, and 27-29 are rejected under 35 U.S.C. **102(e)** as being anticipated by U.S. Patent No. 6,776,810 to Cherian et al.

Cherian et al. disclose a chemical mechanical polishing systems wherein the systems comprises oxidizing agent such as dipersulfates or permanganates or compound containing at least one peroxy group, for example, hydrogen peroxide (column 6, line 55 to column 7, line 10); additionally, the CMP systems comprise a corrosion inhibitor (i.e. a film-forming agent) which is, for example, a heterocyclic organic compound with at least one 5- or 6-member heterocyclic ring as the active functional group, wherein the heterocyclic ring contains at least one nitrogen atom, for example, an azole compound (column 7, lines 10-22) preferably a triazole or benzotriazole. The CMP systems may further comprise a non-ionic surfactant, and a chelating agent, such as amino acids, to enhance the removal rate of the substrate layer being removed (column 7, lines 20-45). The reference, further, discloses the use

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of inorganic acids such as sulfuric acid as well (column 8, lines 50-55). Column 5, lines 23-27 also discloses that the corrosion inhibitor can be polyvinyl imidazole.

With further reference to claim 28, it is noted that although Cherian et al. may not expressly teach a ratio (P_{RR}/B_{RR}), between a metal film polishing rate (P_{RR}) for polishing a metal film formed on a substrate having trenches such that the metal film fills the trenches, or polishing a metal film formed on a substrate having trenches and a barrier metal film formed on the substrate such that the metal film fills the trenches, and a metal film polishing rate (B_{RR}) for polishing a flat blanket metal film as being 3.5 or more, the reference teaches a substantially same polishing composition as that claimed in the instant invention; therefore, said characteristic/property of a ratio of P_{RR}/B_{RR} being 3.5 or more is assumed to be inherent to the composition of the reference since substantially the same compositions cannot have mutually exclusive properties. See MPEP § 2112.01.

With further reference to claim 29, it is noted that said claim is a product-by-process claim. Regarding product-by-process claims, MPEP § 2113 states:

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The limitations directed to the method for producing the claimed composition are not considered to add patentable weight to the examination of the product claims. It is well settled that if the Examiner can find a product in the prior art that is the same or so

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similar as to have been obvious, the burden can be shifted to the Applicant to demonstrate that the process for producing the composition somehow imparts a patentable distinction to the composition under examination.

With further reference to claim 27, it is noted that the limitation directed to the polishing composition being “used for polishing a metal film provided on a substrate having trenches such that the metal film fills the trenches” is an intended use; with reference to statements of intended use, MPEP § 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims 1, 6-12, 16, 18, 23-26, and 27-29 are rejected under 35 U.S.C. **102(b)** as being anticipated by U.S. Patent Application Publication No. 2002/0173221 to Li et al.

Li et al., drawn to polishing substrates, teach polishing compositions which comprise one or more chelating agents such as amino acids, for example, glycine, citric acid, etc. in an amount of from 0.2wt% to 1.5wt%, one or more oxidizers such as hydrogen peroxide in an amount of from about 0.2wt% to about 8wt%, one or more corrosion inhibitors which include any various conventional organic compounds containing an azole group such as benzotriazole, mercaptobenzotriazole, or 5-methyl-1-benzotriazole (Abstract; [0053]-[0056]). The reference, also, disclose the use of pH adjusting agents such as phosphoric acid (i.e. an inorganic acid) which adjust the pH to

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a range between 2.5 to 11. Additionally, Li et al. teach the use of one or more surfactant ([0069]). Moreover, Li et al. disclose the possibility of adding abrasive particles to said compositions wherein said abrasive particles comprise particles such as silica, alumina, titanium oxide, and more in an amount of from 2wt% or less ([0058]).

With further reference to claim 28, it is noted that although Li et al. may not expressly teach a ratio (P_{RR}/B_{RR}), between a metal film polishing rate (P_{RR}) for polishing a metal film formed on a substrate having trenches such that the metal film fills the trenches, or polishing a metal film formed on a substrate having trenches and a barrier metal film formed on the substrate such that the metal film fills the trenches, and a metal film polishing rate (B_{RR}) for polishing a flat blanket metal film as being 3.5 or more, the reference teaches a substantially same polishing composition as that claimed in the instant invention; therefore, said characteristic/property of a ratio of P_{RR}/B_{RR} being 3.5 or more is assumed to be inherent to the composition of the reference since substantially the same compositions cannot have mutually exclusive properties. See MPEP § 2112.01.

With further reference to claim 29, it is noted that said claim is a product-by-process claim. Regarding product-by-process claims, MPEP § 2113 states:

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

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The limitations directed to the method for producing the claimed composition are not considered to add patentable weight to the examination of the product claims. It is well settled that if the Examiner can find a product in the prior art that is the same or so similar as to have been obvious, the burden can be shifted to the Applicant to demonstrate that the process for producing the composition somehow imparts a patentable distinction to the composition under examination.

With further reference to claim 27, it is noted that the limitation directed to the polishing composition being “used for polishing a metal film provided on a substrate having trenches such that the metal film fills the trenches” is an intended use; with reference to statements of intended use, MPEP § 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al.

As detailed above, Li et al. disclose polishing composition comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from among an amino acid, an organic acid, and an inorganic acid. Li et al., further, disclose that the organic compounds containing azole groups (which are also considered the corrosion inhibitors utilized) such as benzotriazole or 5-methyl-1-benzotriazole (in which both falls within the category of compounds having three or more azole moieties) is contained in the compositions in an amount of from about 0.02vol% to about 1.0vol% ([0056]). Although the reference may not expressly disclose the content in mass or weight percent; however, the range based on volume percentage of said compound is seen to have overlapping ranges with the ranges instantly claimed in claims 5, 17 and 19 considering the fact that claims 17 and 19 claim contents of 5 mass% or less or 10 mass% or less, further, considering the fact that the content of said compound is claimed as being as low as 0.001 mass%, and the volume percentage of 0.02vol% to 1.0vol% is taken to have overlapping ranges with the instantly claimed ranges absence clear and specific evidence showing the contrary.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,491,837 to Liu et al.

Li et al. disclose polishing compositions comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. The reference, although disclosing the use of any various organic compounds containing at least three azole groups such as benzotriazole, mercaptobenzotriazole, or 5-methyl-1-benzotriazole, it does not expressly disclose the use of such an azole compound having a vinyl group such as vinylimidazole.

Nevertheless, Liu et al., drawn to polishing slurry, disclose the use of vinylimidazole among many other constituents such as oxidizers, abrasive particles, pH buffers (for example strong acids) in said polishing slurry (Abstract; column 4, lines 25-65); therefore, it would have been obvious to one of ordinary skill in the art to modify Li et al. in order to include an azole compound having a vinyl group which forms a polymer and is used in polishing compositions as that taught by Liu et al. motivated by the fact that a compound such as vinylimidazole (i.e. 1-vinylimidazole) when used in polishing composition comprising periodate as an oxidizer (or co-oxidizer) would prevent the release of elemental iodine into the atmosphere (column 4, lines 45-57). It is noted that the reference discloses that linear polymers of such of various molecular weight may tie-up the iodine produced during the polishing process (column 4, lines 55-57). Furthermore, this combination is motivated by the fact that the polishing slurry of Liu et al. reduce surface roughness or metal substrates, provide a slurry for accelerating the polishing process, and enhance polishing characteristics (column 2, lines 57-65).

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. as applied to claim 1 above, and further in view of U.S. Patent No. 5,976,414 to Bedford et al.

Li et al. disclose polishing compositions comprising a compound having three or more azole moieties such as benzotriazole or mercaptobenzotriazole, an oxidizing agent, and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. Li et al. do not expressly disclose that said compound of three or more azole moieties is soluble in water and that it has a mass average molecular weight in a range of 300 to 5,000,000.

Nevertheless, it would have been obvious to one of ordinary skill in the art that benzotriazole or mercaptobenzotriazole are water soluble, and that they may be polymers of molecular weight of about 13,000 to about 40,000 as that shown and taught by Bedford et al. drawn to multi-component composition for inhibiting corrosion on metallic surfaces (column 2, lines 60-65; column 5, lines 11-19; column 4, lines 11-15) wherein the corrosion inhibitor composition are particularly effective on metal substrates (column 2, line 65 to column 3, line) disclose that benzotriazole or mercaptobenzotriazole are water soluble, and that they are polymers of molecular weight of about 13,000 to about 40,000. The motivation to combine the two would be the fact that the composition of Bedford et al. which also comprises organic acid, alkali metal, water-soluble compounds of molecular weight of from about 13,000 to about 40,000 and other components is utilized in metal surface treatment; furthermore, said compounds are known to be corrosion inhibitors.

Claims 14-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. as applied to claims 1 and 12 above, and further in view of U.S. Patent No. 6,454,819 to Yano et al.

Regarding claims 14-15, Li et al. disclose polishing compositions comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. The reference does not expressly disclose the amount of surfactant utilized nor an alkylaromatic sulfonic acid or salt thereof or any of the other surfactants recited in claim 14 as the surfactant used.

Yano et al., drawn to polishing compositions which comprise chelating agents such as triazole, benzimidazole, or etc., oxidizing agents, surfactants, organic acids, and more, disclose the use of not greater than 0.15wt%, especially not greater than 0.01wt% of surfactants such as alkylbenzenesulfonic acid salts in a polishing composition (column 11, line 60 to column 12, line 34).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Li et al. in order to include a small amount of a surfactant such as not greater than 0.01wt% as that taught by Yano et al. motivated by the fact that a small content of surfactants added to a polishing composition makes it possible to maintain the polishing performance while obtaining particles with excellent dispersability, so that faster polishing can be accomplished without creating scratches in the polishing surfaces

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(column 12, lines 13-17). Furthermore, it would have been obvious to utilize any surfactant being used in polishing composition such as alkylbenzenesulfonic acid salts in the polishing composition of Li et al. motivated by the fact that as taught by Yano et al., said surfactant (i.e. alkylbenzenesulfonic acid salts) are utilized in polishing compositions very similar to that of Li et al., and further motivated by the fact that Li et al. clearly disclose the use of surfactant in their polishing compositions.

Regarding claims 20-22, Li et al. disclose polishing compositions comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from among an amino acid, an organic acid, an inorganic acid, and surfactant as detailed above. The reference, however, does not expressly disclose the use of an alkali substance or its amount in their polishing compositions.

Yano et al., drawn to polishing compositions which comprise chelating agents such as triazole, benzimidazole, or etc., oxidizing agents, surfactants, organic acids, and more, disclose the addition of alkali compounds such as ammonia, inorganic alkali salt or others in order to adjust the pH which helps improve the dispersability and stability of the aqueous dispersion composition (column 12, lines 35-40). The reference, further, disclose the use of potassium hydroxide in an amount which would roughly equates a content of about 0.02wt% of said alkali metal compound in a polishing composition (Example 1, column 15).

Thus, it would have been obvious to one ordinary skill in the art to modify Li et al. in order to include addition of an alkali compound such as ammonia or inorganic alkali

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salts to the polishing composition as that taught by Yano et al. motivated by the fact that such compounds helps adjust the pH, also, improve the dispersability and stability of the aqueous dispersion composition.

In addition, as can be seen in the examples, the reference discloses the use of a small amount of an alkali substance (e.g. potassium hydroxide, ammonia water, sodium persulfate, etc.) such as about 0.02wt% in said polishing compositions; nevertheless, the use of a small amount of an alkali substance in a polishing composition would have been obvious to a person ordinary skill in the art motivated by the fact that said substance is used to adjust the pH; thus, it is apparent that the suitable amount of it can be verified through routine experimentation to one of ordinary skill in the art based on different and specific polishing compositions.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cherian et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,491,837 to Liu et al.

Cherian et al. disclose polishing compositions comprising a compound having three or more azole moieties, an oxidizing agent such as per-compounds such as iodates (column 6, lines 55-60), and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. The reference, although disclosing the use of corrosion inhibitors (i.e. film-forming agents) containing at least three azole groups such as benzotriazole, 1,2,4-triazole and more, it does not

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expressly discloses the use of such an azole compound having a vinyl group such as vinylimidazole.

Nevertheless, Liu et al., drawn to polishing slurry, disclose the use of vinylimidazole among many other constituents such as oxidizers, abrasive particles, pH buffers (for example strong acids) in said polishing slurry (Abstract; column 4, lines 25-65); therefore, it would have been obvious to one of ordinary skill in the art to modify Li et al. in order to include an azole compound having a vinyl group which forms a polymer and is used in polishing compositions as that taught by Liu et al. motivated by the fact that a compound such as vinylimidazole (i.e. 1-vinylimidazole) when used in polishing composition comprising periodate as an oxidizer (or co-oxidizer) would prevent the release of elemental iodine into the atmosphere (column 4, lines 45-57). It is noted that the reference discloses that linear polymers of such of various molecular weight may tie-up the iodine produced during the polishing process (column 4, lines 55-57). Furthermore, this combination is motivated by the fact that the polishing slurry of Liu et al. reduce surface roughness or metal substrates, provide a slurry for accelerating the polishing process, and enhance polishing characteristics (column 2, lines 57-65). In addition, it is to be noted that Cherian et al. teaches that the corrosion inhibitor can be polyvinyl imidazole and this is a polymer of vinyl and an azole, thus further establishing the examiners position above.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cherian et al. as applied to claim 1 above, and further in view of U.S. Patent No. 5,976,414 to Bedford et al.

Cherian et al. disclose polishing compositions comprising a compound having three or more azole moieties such as benzotriazole, an oxidizing agent such as per-compounds such as iodates (column 6, lines 55-60), and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. Cherian et al. do not expressly disclose that said compound of three or more azole moieties is soluble in water and that it has a mass average molecular weight in a range of 300 to 5,000,000.

Nevertheless, it would have been obvious to one of ordinary skill in the art that benzotriazole or mercaptobenzotriazole are water soluble, and that they may be polymers of molecular weight of about 13,000 to about 40,000 as that shown and taught by Bedford et al. drawn to multi-component composition for inhibiting corrosion on metallic surfaces (column 2, lines 60-65; column 5, lines 11-19; column 4, lines 11-15) wherein the corrosion inhibitor composition are particularly effective on metal substrates (column 2, line 65 to column 3, line) disclose that benzotriazole or mercaptobenzotriazole are water soluble, and that they are polymers of molecular weight of about 13,000 to about 40,000. The motivation to combine the two would be the fact that the composition of Bedford et al. which also comprises organic acid, alkali metal, water-soluble compounds of molecular weight of from about 13,000 to about

40,000 and other components is utilized in metal surface treatment; furthermore, said compounds are known to be corrosion inhibitors.

Claims 14-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cherian et al. as applied to claims 1 and 12 above, and further in view of U.S. Patent No. 6,454,819 to Yano et al.

Regarding claims 14-15, Cherian et al. disclose polishing compositions comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. The reference does not expressly disclose the amount of surfactant utilized nor an alkylaromatic sulfonic acid or salt thereof or any of the other surfactants recited in claim 14 as the surfactant used.

Yano et al., drawn to polishing compositions which comprise chelating agents such as triazole, benzimidazole, or etc., oxidizing agents, surfactants, organic acids, and more, disclose the use of not greater than 0.15wt%, especially not greater than 0.01wt% of surfactants such as alkylbenzenesulfonic acid salts in a polishing composition (column 11, line 60 to column 12, line 34).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Cherian et al. in order to include a small amount of a surfactant such as not greater than 0.01wt% as that taught by Yano et al. motivated by the fact that a small content of surfactants added to a polishing composition makes it possible to maintain the polishing

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performance while obtaining particles with excellent dispersability, so that faster polishing can be accomplished without creating scratches in the polishing surfaces (column 12, lines 13-17). Furthermore, it would have been obvious to utilize any surfactant being used in polishing composition such as alkylbenzenesulfonic acid salts in the polishing composition of Cherian et al. motivated by the fact that as taught by Yano et al., said surfactant (i.e. alkylbenzenesulfonic acid salts) are utilized in polishing compositions very similar to that of Cherian et al., and further motivated by the fact that Cherian et al. clearly disclose the use of surfactant in their polishing compositions.

Regarding claims 20-22, Cherian et al. disclose polishing compositions comprising a compound having three or more azole moieties, an oxidizing agent, and one or more species selected from among an amino acid, an inorganic acid, and surfactant as detailed above. The reference, however, does not expressly disclose the use of an alkali substance or its amount in their polishing compositions.

Yano et al., drawn to polishing compositions which comprise chelating agents such as triazole, benzimidazole, or etc., oxidizing agents, surfactants, organic acids, and more, disclose the addition of alkali compounds such as ammonia, inorganic alkali salt or others in order to adjust the pH which helps improve the dispersability and stability of the aqueous dispersion composition (column 12, lines 35-40). The reference, further, disclose the use of potassium hydroxide in an amount which would roughly equates a content of about 0.02wt% of said alkali metal compound in a polishing composition (Example 1, column 15).

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Thus, it would have been obvious to one ordinary skill in the art to modify Cherian et al. in order to include addition of an alkali compound such as ammonia or inorganic alkali salts to the polishing composition as that taught by Yano et al. motivated by the fact that such compounds helps adjust the pH, also, improve the dispersability and stability of the aqueous dispersion composition.

In addition, as can be seen in the examples, the reference discloses the use of a small amount of an alkali substance (e.g. potassium hydroxide, ammonia water, sodium persulfate, etc.) such as about 0.02wt% in said polishing compositions; nevertheless, the use of a small amount of an alkali substance in a polishing composition would have been obvious to a person ordinary skill in the art motivated by the fact that said substance is used to adjust the pH; thus, it is apparent that the suitable amount of it can be verified through routine experimentation to one of ordinary skill in the art based on different and specific polishing compositions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. P./
Examiner, Art Unit 1793

/Michael A Marcheschi/
Primary Examiner, Art Unit 1793